



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 4, 2023 – 10:25 AM EDT

PDB ID : 6P4O
Title : Complex of XPB helicase with Bax1 endonuclease from *Sulfurisphaera tokodaii*
at 3.15 Angstroms resolution
Authors : Fan, L.; DuPrez, K.T.
Deposited on : 2019-05-28
Resolution : 3.15 Å (reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35.1
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

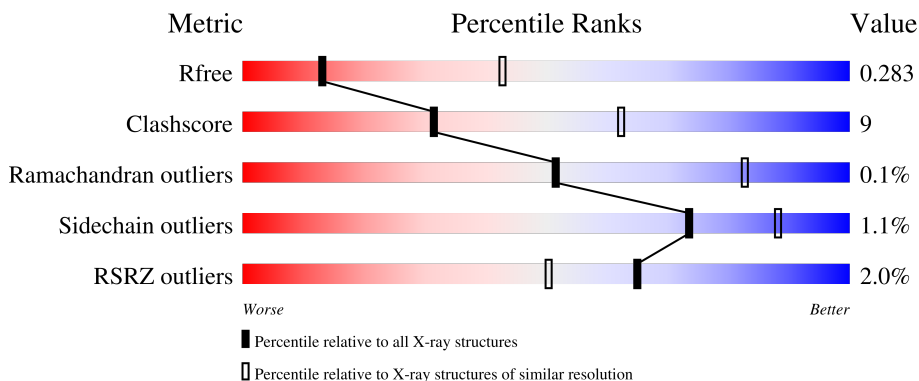
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.15 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.




Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1665 (3.20-3.12)
Clashscore	141614	1804 (3.20-3.12)
Ramachandran outliers	138981	1770 (3.20-3.12)
Sidechain outliers	138945	1769 (3.20-3.12)
RSRZ outliers	127900	1616 (3.20-3.12)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	459	
1	C	459	
1	E	459	
2	B	501	
2	D	501	

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Mol	Chain	Length	Quality of chain
2	F	501	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into three segments: a small red segment on the left labeled '4%', a large green segment in the middle labeled '80%', and a small yellow segment on the right labeled '15%'. A small grey dot is visible at the far right end of the bar.</p>

2 Entry composition i

There are 6 unique types of molecules in this entry. The entry contains 20038 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called DNA-dependent ATPase XPBII.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	442	Total 3357	C 2171	N 562	O 619	S 5	0	0	0
1	C	437	Total 3292	C 2124	N 551	O 612	S 5	0	0	0
1	E	437	Total 3283	C 2123	N 554	O 602	S 4	0	0	0

There are 60 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	expression tag	UNP Q970I2
A	-18	GLY	-	expression tag	UNP Q970I2
A	-17	SER	-	expression tag	UNP Q970I2
A	-16	SER	-	expression tag	UNP Q970I2
A	-15	HIS	-	expression tag	UNP Q970I2
A	-14	HIS	-	expression tag	UNP Q970I2
A	-13	HIS	-	expression tag	UNP Q970I2
A	-12	HIS	-	expression tag	UNP Q970I2
A	-11	HIS	-	expression tag	UNP Q970I2
A	-10	HIS	-	expression tag	UNP Q970I2
A	-9	SER	-	expression tag	UNP Q970I2
A	-8	SER	-	expression tag	UNP Q970I2
A	-7	GLY	-	expression tag	UNP Q970I2
A	-6	LEU	-	expression tag	UNP Q970I2
A	-5	VAL	-	expression tag	UNP Q970I2
A	-4	PRO	-	expression tag	UNP Q970I2
A	-3	ARG	-	expression tag	UNP Q970I2
A	-2	GLY	-	expression tag	UNP Q970I2
A	-1	SER	-	expression tag	UNP Q970I2
A	0	HIS	-	expression tag	UNP Q970I2
C	-19	MET	-	expression tag	UNP Q970I2
C	-18	GLY	-	expression tag	UNP Q970I2
C	-17	SER	-	expression tag	UNP Q970I2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-16	SER	-	expression tag	UNP Q970I2
C	-15	HIS	-	expression tag	UNP Q970I2
C	-14	HIS	-	expression tag	UNP Q970I2
C	-13	HIS	-	expression tag	UNP Q970I2
C	-12	HIS	-	expression tag	UNP Q970I2
C	-11	HIS	-	expression tag	UNP Q970I2
C	-10	HIS	-	expression tag	UNP Q970I2
C	-9	SER	-	expression tag	UNP Q970I2
C	-8	SER	-	expression tag	UNP Q970I2
C	-7	GLY	-	expression tag	UNP Q970I2
C	-6	LEU	-	expression tag	UNP Q970I2
C	-5	VAL	-	expression tag	UNP Q970I2
C	-4	PRO	-	expression tag	UNP Q970I2
C	-3	ARG	-	expression tag	UNP Q970I2
C	-2	GLY	-	expression tag	UNP Q970I2
C	-1	SER	-	expression tag	UNP Q970I2
C	0	HIS	-	expression tag	UNP Q970I2
E	-19	MET	-	expression tag	UNP Q970I2
E	-18	GLY	-	expression tag	UNP Q970I2
E	-17	SER	-	expression tag	UNP Q970I2
E	-16	SER	-	expression tag	UNP Q970I2
E	-15	HIS	-	expression tag	UNP Q970I2
E	-14	HIS	-	expression tag	UNP Q970I2
E	-13	HIS	-	expression tag	UNP Q970I2
E	-12	HIS	-	expression tag	UNP Q970I2
E	-11	HIS	-	expression tag	UNP Q970I2
E	-10	HIS	-	expression tag	UNP Q970I2
E	-9	SER	-	expression tag	UNP Q970I2
E	-8	SER	-	expression tag	UNP Q970I2
E	-7	GLY	-	expression tag	UNP Q970I2
E	-6	LEU	-	expression tag	UNP Q970I2
E	-5	VAL	-	expression tag	UNP Q970I2
E	-4	PRO	-	expression tag	UNP Q970I2
E	-3	ARG	-	expression tag	UNP Q970I2
E	-2	GLY	-	expression tag	UNP Q970I2
E	-1	SER	-	expression tag	UNP Q970I2
E	0	HIS	-	expression tag	UNP Q970I2

- Molecule 2 is a protein called Endonuclease Bax1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	479	3352	2169	564	615	4	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	477	Total	C	N	O	S	0	0	0
			3334	2158	565	607	4			
2	F	481	Total	C	N	O	S	0	0	0
			3343	2163	562	614	4			

There are 60 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-19	MET	-	expression tag	UNP Q970I1
B	-18	GLY	-	expression tag	UNP Q970I1
B	-17	SER	-	expression tag	UNP Q970I1
B	-16	SER	-	expression tag	UNP Q970I1
B	-15	HIS	-	expression tag	UNP Q970I1
B	-14	HIS	-	expression tag	UNP Q970I1
B	-13	HIS	-	expression tag	UNP Q970I1
B	-12	HIS	-	expression tag	UNP Q970I1
B	-11	HIS	-	expression tag	UNP Q970I1
B	-10	HIS	-	expression tag	UNP Q970I1
B	-9	SER	-	expression tag	UNP Q970I1
B	-8	SER	-	expression tag	UNP Q970I1
B	-7	GLY	-	expression tag	UNP Q970I1
B	-6	LEU	-	expression tag	UNP Q970I1
B	-5	VAL	-	expression tag	UNP Q970I1
B	-4	PRO	-	expression tag	UNP Q970I1
B	-3	ARG	-	expression tag	UNP Q970I1
B	-2	GLY	-	expression tag	UNP Q970I1
B	-1	SER	-	expression tag	UNP Q970I1
B	0	HIS	-	expression tag	UNP Q970I1
D	-19	MET	-	expression tag	UNP Q970I1
D	-18	GLY	-	expression tag	UNP Q970I1
D	-17	SER	-	expression tag	UNP Q970I1
D	-16	SER	-	expression tag	UNP Q970I1
D	-15	HIS	-	expression tag	UNP Q970I1
D	-14	HIS	-	expression tag	UNP Q970I1
D	-13	HIS	-	expression tag	UNP Q970I1
D	-12	HIS	-	expression tag	UNP Q970I1
D	-11	HIS	-	expression tag	UNP Q970I1
D	-10	HIS	-	expression tag	UNP Q970I1
D	-9	SER	-	expression tag	UNP Q970I1
D	-8	SER	-	expression tag	UNP Q970I1
D	-7	GLY	-	expression tag	UNP Q970I1
D	-6	LEU	-	expression tag	UNP Q970I1

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-5	VAL	-	expression tag	UNP Q970I1
D	-4	PRO	-	expression tag	UNP Q970I1
D	-3	ARG	-	expression tag	UNP Q970I1
D	-2	GLY	-	expression tag	UNP Q970I1
D	-1	SER	-	expression tag	UNP Q970I1
D	0	HIS	-	expression tag	UNP Q970I1
F	-19	MET	-	expression tag	UNP Q970I1
F	-18	GLY	-	expression tag	UNP Q970I1
F	-17	SER	-	expression tag	UNP Q970I1
F	-16	SER	-	expression tag	UNP Q970I1
F	-15	HIS	-	expression tag	UNP Q970I1
F	-14	HIS	-	expression tag	UNP Q970I1
F	-13	HIS	-	expression tag	UNP Q970I1
F	-12	HIS	-	expression tag	UNP Q970I1
F	-11	HIS	-	expression tag	UNP Q970I1
F	-10	HIS	-	expression tag	UNP Q970I1
F	-9	SER	-	expression tag	UNP Q970I1
F	-8	SER	-	expression tag	UNP Q970I1
F	-7	GLY	-	expression tag	UNP Q970I1
F	-6	LEU	-	expression tag	UNP Q970I1
F	-5	VAL	-	expression tag	UNP Q970I1
F	-4	PRO	-	expression tag	UNP Q970I1
F	-3	ARG	-	expression tag	UNP Q970I1
F	-2	GLY	-	expression tag	UNP Q970I1
F	-1	SER	-	expression tag	UNP Q970I1
F	0	HIS	-	expression tag	UNP Q970I1

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).

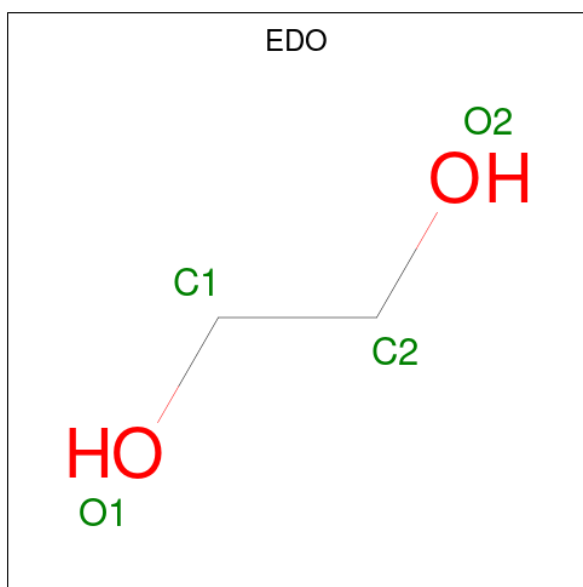


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 6 3 3	0	0
3	E	1	Total C O 6 3 3	0	0

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	3	Total Cl 3 3	0	0
4	F	2	Total Cl 2 2	0	0

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	1	Total	C O	0	0
			4	2 2		

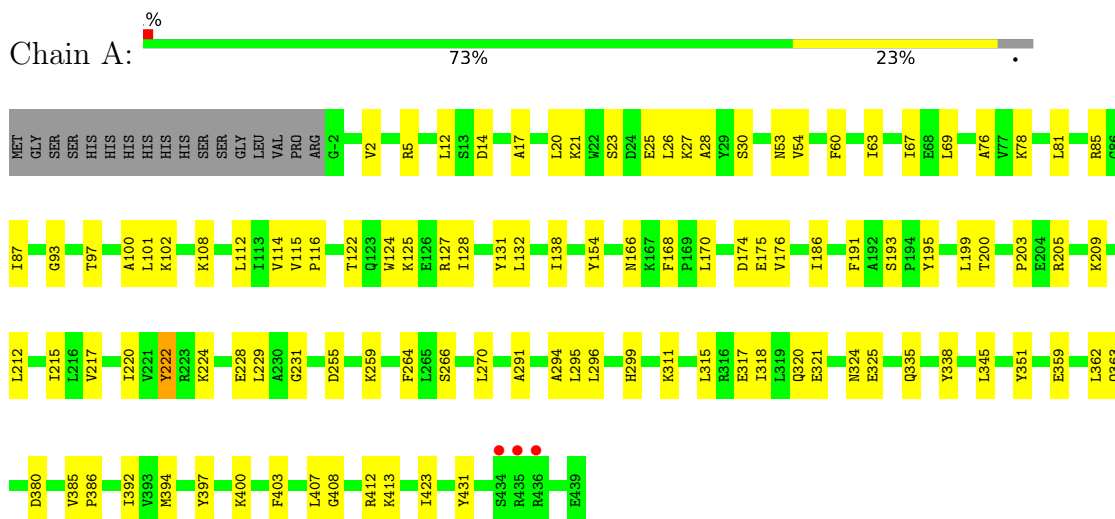
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	21	Total	O	0	0
			21	21		
6	B	3	Total	O	0	0
			3	3		
6	C	10	Total	O	0	0
			10	10		
6	D	8	Total	O	0	0
			8	8		
6	E	11	Total	O	0	0
			11	11		
6	F	3	Total	O	0	0
			3	3		

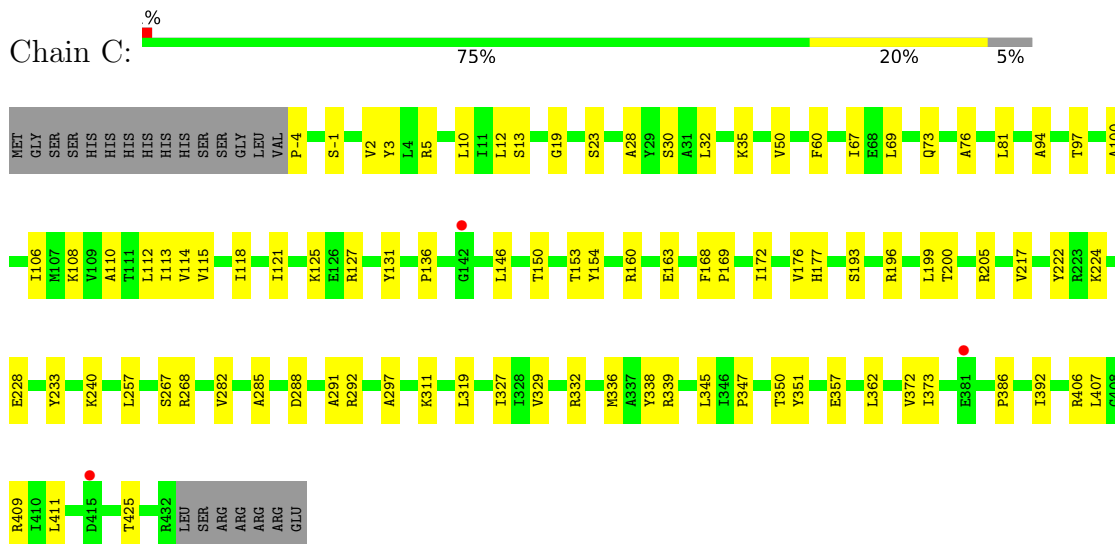
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

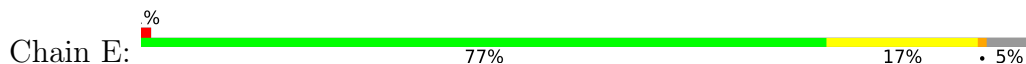
- Molecule 1: DNA-dependent ATPase XPBII

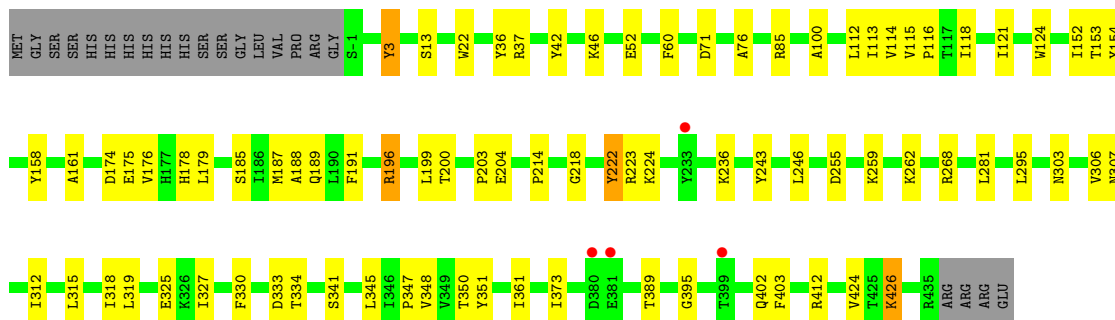


- Molecule 1: DNA-dependent ATPase XPBII

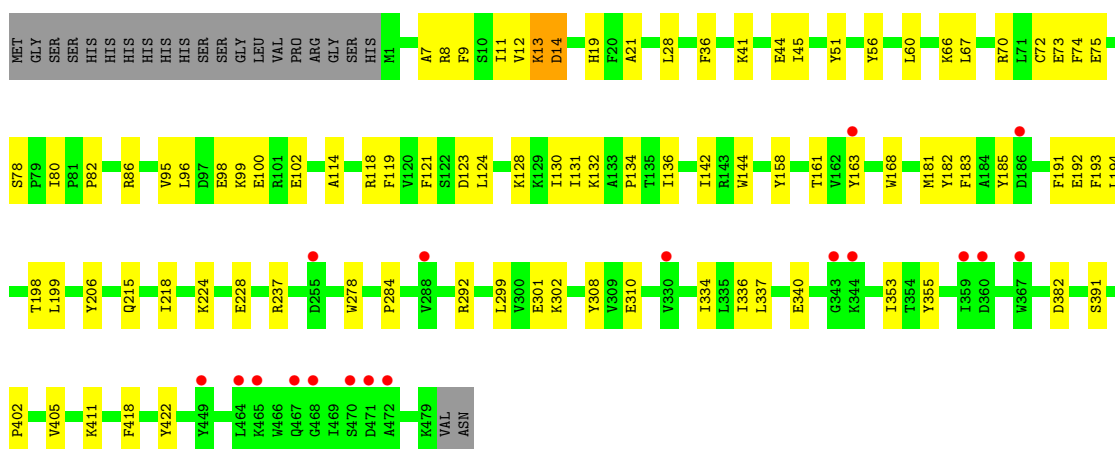
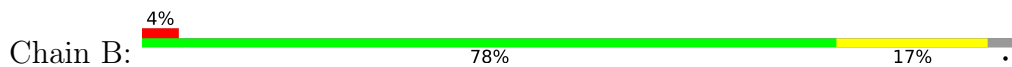


- Molecule 1: DNA-dependent ATPase XPBII

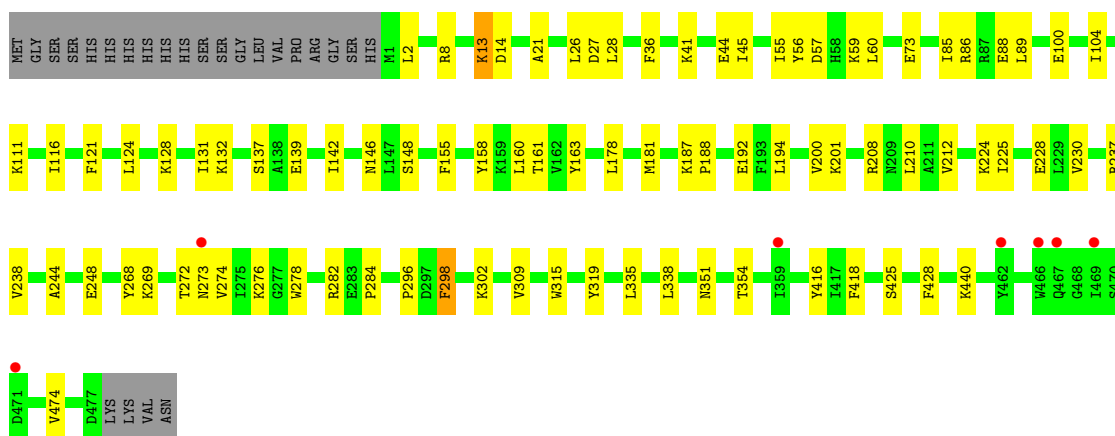
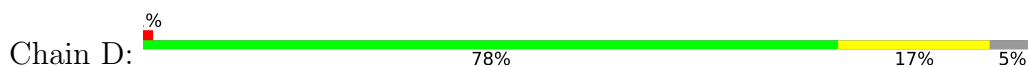




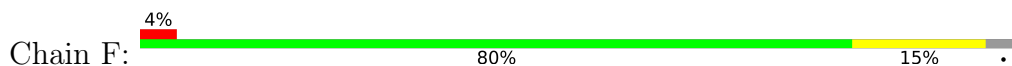
• Molecule 2: Endonuclease Bax1

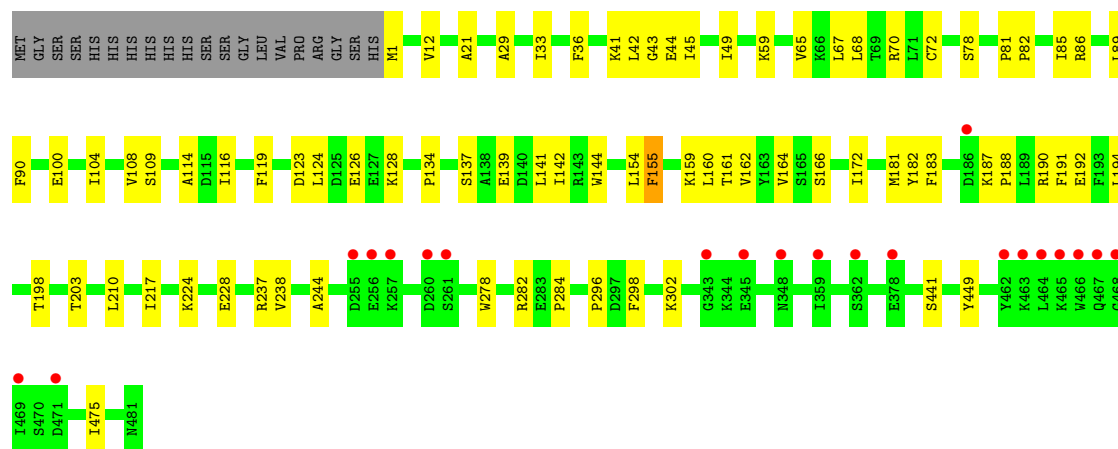


• Molecule 2: Endonuclease Bax1



• Molecule 2: Endonuclease Bax1





4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	217.72Å 125.85Å 148.97Å 90.00° 101.52° 90.00°	Depositor
Resolution (Å)	29.93 – 3.15 29.91 – 3.15	Depositor EDS
% Data completeness (in resolution range)	84.8 (29.93-3.15) 85.0 (29.91-3.15)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.14	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.54 (at 3.18Å)	Xtrriage
Refinement program	REFMAC 5.8.0238	Depositor
R, R_{free}	0.265 , 0.282 0.265 , 0.283	Depositor DCC
R_{free} test set	1999 reflections (3.45%)	wwPDB-VP
Wilson B-factor (Å ²)	81.8	Xtrriage
Anisotropy	0.055	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 87.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.43$, $\langle L^2 \rangle = 0.26$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.90	EDS
Total number of atoms	20038	wwPDB-VP
Average B, all atoms (Å ²)	89.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.89% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: EDO, CL, GOL

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	A	0.28	0/3421	0.50	0/4633
1	C	0.28	0/3354	0.49	0/4550
1	E	0.28	0/3345	0.50	0/4539
2	B	0.29	0/3417	0.51	1/4669 (0.0%)
2	D	0.30	0/3399	0.52	0/4639
2	F	0.29	0/3408	0.50	0/4654
All	All	0.29	0/20344	0.50	1/27684 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	11	ILE	CB-CA-C	-5.27	101.05	111.60

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3357	0	3228	68	0
1	C	3292	0	3150	59	0
1	E	3283	0	3143	57	0
2	B	3352	0	2836	56	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	3334	0	2828	64	0
2	F	3343	0	2809	58	0
3	A	6	0	8	0	0
3	E	6	0	8	1	0
4	A	3	0	0	0	0
4	F	2	0	0	1	0
5	B	4	0	6	2	0
6	A	21	0	0	0	0
6	B	3	0	0	0	0
6	C	10	0	0	0	0
6	D	8	0	0	0	0
6	E	11	0	0	0	0
6	F	3	0	0	0	0
All	All	20038	0	18016	341	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 9.

All (341) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:222:TYR:HE1	1:E:224:LYS:HG2	1.39	0.88
1:C:357:GLU:OE2	2:D:86:ARG:NH1	2.10	0.85
2:D:161:THR:HG22	2:D:192:GLU:HG2	1.58	0.84
2:F:86:ARG:HG2	2:F:90:PHE:HE2	1.43	0.83
1:C:76:ALA:HA	1:C:222:TYR:HD2	1.44	0.83
1:A:76:ALA:HA	1:A:222:TYR:HD2	1.44	0.81
1:C:222:TYR:HE1	1:C:224:LYS:HE2	1.46	0.81
1:E:76:ALA:HA	1:E:222:TYR:CD2	2.16	0.80
1:C:345:LEU:HD22	2:D:89:LEU:HD21	1.64	0.79
2:F:59:LYS:NZ	4:F:501:CL:CL	2.55	0.77
2:D:36:PHE:HE1	2:D:45:ILE:HG21	1.50	0.76
2:F:161:THR:HG22	2:F:192:GLU:HG2	1.66	0.76
1:A:2:VAL:HG23	1:A:14:ASP:HB2	1.66	0.76
1:C:224:LYS:HD2	1:C:228:GLU:HG2	1.69	0.75
1:A:351:TYR:HB2	1:A:380:ASP:HB2	1.67	0.75
1:C:76:ALA:HA	1:C:222:TYR:CD2	2.21	0.74
2:B:161:THR:HG22	2:B:192:GLU:HG2	1.69	0.73
1:C:12:LEU:HD13	1:C:30:SER:HB3	1.71	0.72
1:C:222:TYR:CE1	1:C:224:LYS:HE2	2.23	0.72
1:A:116:PRO:HG3	1:A:175:GLU:HG2	1.71	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:282:VAL:HG13	2:D:55:ILE:HA	1.70	0.71
1:A:114:VAL:HG12	1:A:154:TYR:CD1	2.27	0.69
2:D:416:TYR:CD1	2:D:425:SER:HA	2.28	0.69
1:A:76:ALA:HA	1:A:222:TYR:CD2	2.26	0.69
2:F:36:PHE:HE1	2:F:45:ILE:HG21	1.57	0.69
2:F:160:LEU:HD21	2:F:210:LEU:HD11	1.74	0.69
1:C:329:VAL:HG12	1:C:392:ILE:HB	1.75	0.68
1:E:118:ILE:O	1:E:121:ILE:HG13	1.94	0.68
2:B:14:ASP:N	2:B:14:ASP:OD1	2.22	0.68
1:C:67:ILE:HD11	1:C:131:TYR:HB3	1.76	0.68
1:C:114:VAL:HG12	1:C:154:TYR:CD1	2.29	0.67
2:B:278:TRP:CE2	2:B:302:LYS:HB2	2.30	0.67
2:B:114:ALA:HA	2:D:418:PHE:H	1.59	0.67
1:A:311:LYS:NZ	1:A:423:ILE:O	2.28	0.67
2:D:137:SER:OG	2:D:139:GLU:OE1	2.13	0.67
2:D:28:LEU:HB2	2:D:56:TYR:HE2	1.60	0.66
2:D:278:TRP:CD1	2:D:302:LYS:HB2	2.31	0.66
2:F:284:PRO:HG2	2:F:296:PRO:HG2	1.78	0.66
1:A:87:ILE:HB	1:A:220:ILE:HD13	1.76	0.66
1:E:85:ARG:HD3	1:E:196:ARG:HB2	1.77	0.66
2:B:284:PRO:HB3	2:B:299:LEU:HD23	1.78	0.65
1:E:176:VAL:HG12	1:E:200:THR:HB	1.79	0.65
1:A:264:PHE:HE2	1:A:291:ALA:HA	1.62	0.65
1:C:73:GLN:NE2	1:C:94:ALA:O	2.26	0.65
1:A:12:LEU:HD12	1:A:28:ALA:HB3	1.79	0.64
2:F:282:ARG:HA	2:F:298:PHE:HD1	1.64	0.63
1:E:114:VAL:HG12	1:E:154:TYR:CD1	2.33	0.63
1:A:335:GLN:HE22	2:B:44:GLU:HB3	1.64	0.63
2:B:418:PHE:H	2:F:114:ALA:HA	1.64	0.62
1:E:76:ALA:HA	1:E:222:TYR:HD2	1.58	0.62
2:D:28:LEU:HB2	2:D:56:TYR:CE2	2.34	0.62
1:A:176:VAL:HG12	1:A:200:THR:HB	1.80	0.62
2:D:2:LEU:CD1	2:D:148:SER:HB3	2.30	0.62
2:F:82:PRO:HA	2:F:85:ILE:HD12	1.82	0.61
1:E:116:PRO:HG3	1:E:175:GLU:HG2	1.82	0.61
2:D:36:PHE:CE1	2:D:45:ILE:HG21	2.33	0.61
1:E:189:GLN:HE22	3:E:501:GOL:H11	1.64	0.61
2:D:284:PRO:HG2	2:D:296:PRO:HG2	1.82	0.61
2:D:86:ARG:HD3	2:D:121:PHE:CE1	2.36	0.60
2:F:137:SER:OG	2:F:139:GLU:OE1	2.19	0.60
2:F:78:SER:HB2	2:F:119:PHE:HB3	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:41:LYS:O	2:D:44:GLU:HG2	2.02	0.60
2:F:194:LEU:HD23	2:F:198:THR:HG21	1.84	0.59
1:A:12:LEU:HD13	1:A:30:SER:HB3	1.84	0.59
1:A:25:GLU:OE2	1:C:23:SER:OG	2.14	0.59
1:E:100:ALA:HB2	1:E:199:LEU:HD11	1.85	0.59
1:E:204:GLU:N	1:E:204:GLU:OE1	2.35	0.59
1:C:12:LEU:HD12	1:C:28:ALA:HB3	1.84	0.59
1:A:100:ALA:HB2	1:A:199:LEU:HD11	1.85	0.59
1:C:193:SER:O	1:C:196:ARG:NH2	2.36	0.58
2:D:278:TRP:HE1	2:D:302:LYS:HE3	1.68	0.58
2:D:425:SER:HB3	2:D:428:PHE:HB3	1.84	0.58
2:F:155:PHE:HE1	2:F:203:THR:HG22	1.68	0.58
1:E:115:VAL:HG12	1:E:174:ASP:HB3	1.85	0.57
1:C:177:HIS:O	1:C:205:ARG:NH2	2.37	0.57
1:C:113:ILE:HG12	1:C:172:ILE:HD12	1.85	0.57
2:D:282:ARG:O	2:D:298:PHE:HB3	2.03	0.57
1:E:222:TYR:CE1	1:E:224:LYS:HG2	2.30	0.57
1:E:246:LEU:HD13	1:E:426:LYS:HE3	1.86	0.57
2:F:42:LEU:HA	2:F:45:ILE:HD12	1.86	0.57
1:E:402:GLN:HG3	1:E:403:PHE:H	1.68	0.57
2:F:36:PHE:CE1	2:F:45:ILE:HG21	2.39	0.57
1:A:385:VAL:HB	1:A:386:PRO:HD3	1.87	0.56
2:D:85:ILE:HG23	2:D:116:ILE:HG23	1.87	0.56
2:D:86:ARG:HD3	2:D:121:PHE:HE1	1.70	0.56
2:D:200:VAL:HG23	2:D:201:LYS:HG3	1.88	0.56
2:B:78:SER:HB3	2:B:119:PHE:HB3	1.87	0.56
1:C:125:LYS:HG3	1:C:136:PRO:HD2	1.88	0.55
1:A:85:ARG:HG2	1:A:217:VAL:O	2.06	0.55
1:E:185:SER:O	1:E:189:GLN:HG3	2.06	0.55
2:D:187:LYS:HB3	2:D:188:PRO:HD3	1.88	0.55
1:C:160:ARG:HG2	1:C:163:GLU:HB3	1.88	0.55
1:E:345:LEU:HD22	2:F:89:LEU:HD21	1.88	0.55
1:C:176:VAL:HG12	1:C:200:THR:HB	1.88	0.55
2:F:181:MET:HG3	2:F:194:LEU:HB2	1.87	0.55
1:A:296:LEU:HD12	2:B:51:TYR:CZ	2.42	0.55
2:F:41:LYS:O	2:F:44:GLU:HG2	2.06	0.55
2:F:1:MET:HG3	2:F:70:ARG:HH12	1.72	0.54
1:C:100:ALA:HB2	1:C:199:LEU:HD11	1.88	0.54
2:D:26:LEU:HD21	2:D:139:GLU:HG3	1.88	0.54
1:E:325:GLU:HB3	1:E:389:THR:OG1	2.07	0.54
1:C:3:TYR:O	1:C:13:SER:HA	2.08	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:311:LYS:HD2	1:C:425:THR:OG1	2.08	0.54
1:C:224:LYS:HD2	1:C:228:GLU:CG	2.35	0.53
2:F:154:LEU:HD12	2:F:160:LEU:HD22	1.89	0.53
1:A:324:ASN:OD1	1:A:325:GLU:N	2.41	0.53
2:B:67:LEU:HB3	2:B:144:TRP:CZ3	2.43	0.53
2:D:2:LEU:HD13	2:D:148:SER:HB3	1.89	0.53
1:E:303:ASN:OD1	1:E:307:ASN:ND2	2.42	0.53
1:A:315:LEU:HD23	1:A:318:ILE:HD11	1.91	0.53
1:E:402:GLN:HG3	1:E:403:PHE:N	2.24	0.53
1:A:124:TRP:NE1	1:A:174:ASP:OD2	2.36	0.53
1:C:327:ILE:HB	1:C:372:VAL:HG22	1.91	0.53
1:E:124:TRP:NE1	1:E:174:ASP:OD2	2.36	0.53
2:D:160:LEU:HD21	2:D:210:LEU:HD21	1.91	0.52
2:F:12:VAL:HG23	2:F:12:VAL:O	2.09	0.52
1:A:168:PHE:O	1:A:193:SER:OG	2.22	0.52
2:F:29:ALA:O	2:F:33:ILE:HG12	2.10	0.52
2:B:158:TYR:N	2:B:228:GLU:O	2.40	0.52
1:C:69:LEU:HD12	1:C:73:GLN:HB3	1.92	0.52
1:E:3:TYR:O	1:E:13:SER:HA	2.10	0.52
2:F:100:GLU:O	2:F:104:ILE:HG12	2.10	0.51
2:D:73:GLU:O	2:D:131:ILE:HG13	2.10	0.51
1:E:259:LYS:HD3	1:E:262:LYS:HB2	1.92	0.51
1:A:229:LEU:HD12	1:A:231:GLY:H	1.75	0.51
2:B:75:GLU:OE2	2:B:118:ARG:NH1	2.43	0.51
2:B:194:LEU:HD23	2:B:198:THR:HG21	1.93	0.51
2:D:224:LYS:HG3	2:D:244:ALA:HB2	1.93	0.51
1:E:236:LYS:HG3	1:E:412:ARG:HH21	1.76	0.50
1:A:362:LEU:HD13	1:A:385:VAL:HG11	1.92	0.50
1:E:223:ARG:O	1:E:224:LYS:HE2	2.11	0.50
1:A:318:ILE:HD12	1:A:392:ILE:HG12	1.92	0.50
2:B:78:SER:OG	2:B:80:ILE:O	2.23	0.50
1:C:110:ALA:HB3	1:C:169:PRO:HD2	1.93	0.50
2:D:269:LYS:O	2:D:273:ASN:N	2.40	0.50
1:A:264:PHE:CD2	1:A:294:ALA:HB2	2.47	0.50
1:A:63:ILE:HD12	1:A:132:LEU:HD22	1.94	0.50
1:A:23:SER:HB3	1:A:26:LEU:HB2	1.94	0.50
2:D:315:TRP:CZ3	2:D:338:LEU:HD22	2.46	0.50
2:B:28:LEU:HB2	2:B:56:TYR:CE2	2.47	0.50
1:C:-4:PRO:HG2	1:C:-1:SER:HB3	1.92	0.49
1:A:112:LEU:HD23	1:A:191:PHE:HE2	1.77	0.49
1:C:357:GLU:CD	2:D:86:ARG:HH12	2.14	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:8:ARG:HH21	2:B:60:LEU:HD13	1.76	0.49
2:F:108:VAL:HG23	2:F:116:ILE:HG13	1.94	0.49
2:F:86:ARG:HG2	2:F:90:PHE:CE2	2.34	0.49
1:E:222:TYR:CE1	1:E:224:LYS:HE3	2.47	0.49
1:A:224:LYS:HD2	1:A:228:GLU:HG2	1.93	0.49
1:A:408:GLY:O	1:A:412:ARG:N	2.45	0.49
1:A:222:TYR:HE1	1:A:224:LYS:HG2	1.78	0.49
2:B:36:PHE:HE1	2:B:45:ILE:HG21	1.78	0.48
1:C:4:PRO:HG3	1:E:178:HIS:CE1	2.47	0.48
2:B:99:LYS:HG3	2:B:100:GLU:N	2.28	0.48
1:E:85:ARG:CD	1:E:196:ARG:HB2	2.43	0.48
1:C:267:SER:HB3	1:C:268:ARG:HH21	1.77	0.48
1:C:350:THR:HG22	1:C:351:TYR:H	1.78	0.48
2:D:158:TYR:N	2:D:228:GLU:O	2.43	0.48
2:D:181:MET:HG3	2:D:194:LEU:HB2	1.95	0.48
1:A:222:TYR:HE1	1:A:224:LYS:CG	2.27	0.48
1:A:125:LYS:HE2	1:A:138:ILE:HG13	1.96	0.48
2:D:440:LYS:HA	2:D:474:VAL:HA	1.95	0.48
2:F:33:ILE:HD13	2:F:68:LEU:HD11	1.96	0.48
2:D:284:PRO:HD2	2:D:298:PHE:HA	1.96	0.48
1:E:36:TYR:OH	1:E:52:GLU:OE2	2.22	0.48
1:A:69:LEU:HD11	1:A:102:LYS:HG2	1.96	0.47
1:E:319:LEU:HD22	1:E:327:ILE:HD13	1.95	0.47
2:F:85:ILE:HG23	2:F:116:ILE:HG23	1.95	0.47
1:A:222:TYR:CE1	1:A:224:LYS:HG2	2.49	0.47
2:B:41:LYS:HA	2:B:128:LYS:O	2.14	0.47
1:A:317:GLU:O	1:A:321:GLU:HG3	2.14	0.47
2:F:33:ILE:HD11	2:F:141:LEU:HD22	1.95	0.47
2:D:146:ASN:HD22	2:D:248:GLU:HB3	1.80	0.47
2:B:41:LYS:O	2:B:44:GLU:HG2	2.13	0.47
1:C:67:ILE:HG22	1:C:69:LEU:HD22	1.96	0.47
1:C:97:THR:HG21	1:C:127:ARG:HD3	1.95	0.47
1:C:146:LEU:HD11	1:C:168:PHE:HZ	1.79	0.47
1:C:112:LEU:HD12	1:C:150:THR:HB	1.97	0.47
1:E:350:THR:HG22	1:E:351:TYR:N	2.30	0.47
2:F:155:PHE:CE1	2:F:203:THR:HG22	2.48	0.47
2:F:441:SER:HA	2:F:475:ILE:HG22	1.96	0.47
2:B:391:SER:HA	2:B:422:TYR:HD1	1.79	0.47
1:C:108:LYS:HD3	2:F:237:ARG:CZ	2.44	0.47
2:D:28:LEU:HD22	2:D:56:TYR:HD2	1.80	0.47
2:D:278:TRP:NE1	2:D:302:LYS:HE3	2.30	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:42:LEU:CD2	2:F:128:LYS:HB2	2.44	0.47
2:F:164:VAL:HG22	2:F:166:SER:O	2.15	0.47
2:B:278:TRP:HA	2:B:301:GLU:O	2.14	0.47
2:F:49:ILE:HD13	2:F:65:VAL:HG21	1.97	0.47
1:C:350:THR:HG22	1:C:351:TYR:N	2.30	0.47
2:B:182:TYR:HB3	2:B:193:PHE:CD1	2.50	0.46
2:B:215:GLN:O	2:B:218:ILE:HG13	2.15	0.46
1:E:341:SER:HB2	1:E:348:VAL:CG2	2.45	0.46
1:A:320:GLN:HB2	2:B:96:LEU:HD13	1.97	0.46
1:E:214:PRO:HA	1:E:218:GLY:HA2	1.96	0.46
2:B:163:TYR:CD2	2:B:224:LYS:HE3	2.50	0.46
2:F:43:GLY:HA3	2:F:126:GLU:HG3	1.97	0.46
2:D:55:ILE:HG13	2:D:56:TYR:CD1	2.50	0.46
2:D:181:MET:SD	2:D:194:LEU:HD22	2.56	0.46
2:F:278:TRP:CD1	2:F:302:LYS:HB2	2.50	0.46
1:A:345:LEU:HD12	2:B:95:VAL:HG21	1.97	0.46
1:A:93:GLY:HA2	1:A:413:LYS:HA	1.98	0.46
1:E:174:ASP:OD1	1:E:175:GLU:N	2.49	0.46
2:D:13:LYS:HB3	2:D:14:ASP:H	1.60	0.46
2:D:335:LEU:HA	2:D:351:ASN:HA	1.98	0.46
1:A:23:SER:O	1:A:27:LYS:N	2.47	0.46
1:A:359:GLU:O	1:A:363:GLN:HG2	2.16	0.46
2:B:185:TYR:HA	2:B:292:ARG:HA	1.98	0.46
1:C:60:PHE:O	2:F:238:VAL:HG12	2.16	0.46
1:C:285:ALA:HB1	1:C:292:ARG:HG2	1.98	0.46
1:C:19:GLY:O	1:C:35:LYS:NZ	2.46	0.45
1:A:255:ASP:O	1:A:259:LYS:N	2.46	0.45
1:A:5:ARG:HA	1:A:53:ASN:O	2.16	0.45
1:A:60:PHE:HB3	2:D:237:ARG:HG3	1.97	0.45
1:A:101:LEU:HD21	1:A:128:ILE:HG12	1.98	0.45
1:A:315:LEU:HD11	1:A:394:MET:SD	2.56	0.45
2:B:131:ILE:HG13	2:B:132:LYS:N	2.31	0.45
2:F:182:TYR:O	2:F:183:PHE:HD1	1.98	0.45
2:B:237:ARG:HG3	1:E:60:PHE:HB3	1.99	0.45
1:C:347:PRO:HD2	1:C:373:ILE:HG22	1.97	0.45
2:D:41:LYS:HA	2:D:128:LYS:O	2.17	0.45
1:E:112:LEU:HD21	1:E:152:ILE:HG21	1.99	0.45
1:C:10:LEU:HD23	1:C:32:LEU:HA	1.98	0.45
1:C:362:LEU:HD13	1:C:362:LEU:HA	1.79	0.45
2:F:172:ILE:HD11	2:F:191:PHE:CE1	2.52	0.45
2:D:178:LEU:HD21	2:D:212:VAL:HB	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:7:ALA:O	5:B:501:EDO:H22	2.17	0.45
1:A:17:ALA:HB3	1:A:20:LEU:HD13	2.00	0.44
1:A:264:PHE:CE2	1:A:291:ALA:HA	2.47	0.44
2:B:182:TYR:O	2:B:183:PHE:HD1	2.00	0.44
2:B:199:LEU:HD22	2:B:206:TYR:HB2	1.99	0.44
1:C:336:MET:HG2	1:C:339:ARG:HD2	1.99	0.44
2:D:88:GLU:OE1	2:D:111:LYS:NZ	2.45	0.44
2:D:268:TYR:O	2:D:272:THR:CB	2.65	0.44
1:E:341:SER:HB2	1:E:348:VAL:HG22	1.98	0.44
1:A:128:ILE:HG23	1:A:132:LEU:HD12	1.99	0.44
2:D:284:PRO:CD	2:D:298:PHE:HA	2.47	0.44
1:E:281:LEU:HD11	1:E:295:LEU:HB2	1.99	0.44
1:E:312:ILE:HA	1:E:315:LEU:HD12	1.99	0.44
1:A:403:PHE:CZ	1:A:407:LEU:HD11	2.53	0.44
2:B:36:PHE:CE1	2:B:45:ILE:HG21	2.53	0.44
2:B:181:MET:HE3	2:B:194:LEU:HD22	2.00	0.44
2:F:162:VAL:HG11	2:F:217:ILE:HD13	2.00	0.44
2:B:12:VAL:O	2:B:12:VAL:HG23	2.18	0.44
2:B:73:GLU:HG3	2:B:132:LYS:HE3	1.99	0.44
2:F:67:LEU:HB3	2:F:144:TRP:CZ3	2.52	0.44
2:B:98:GLU:O	2:B:102:GLU:N	2.43	0.44
1:E:347:PRO:HD2	1:E:373:ILE:HD13	1.99	0.44
2:F:188:PRO:HD2	2:F:190:ARG:HH21	1.83	0.44
1:A:108:LYS:HD2	2:D:237:ARG:NH2	2.32	0.44
1:A:200:THR:HG23	1:A:203:PRO:HG3	1.98	0.44
1:E:315:LEU:HA	1:E:318:ILE:HG22	2.00	0.44
2:B:9:PHE:CE1	5:B:501:EDO:H21	2.53	0.43
1:C:81:LEU:HD21	1:C:106:ILE:HG21	2.00	0.43
2:F:123:ASP:OD1	2:F:124:LEU:HD12	2.18	0.43
1:E:113:ILE:HG21	1:E:124:TRP:CE3	2.53	0.43
2:F:86:ARG:NH2	2:F:123:ASP:OD2	2.52	0.43
1:A:122:THR:HG21	1:A:385:VAL:HA	2.00	0.43
1:C:319:LEU:HD21	1:C:327:ILE:HG21	1.99	0.43
1:A:97:THR:HG21	1:A:127:ARG:HD3	2.00	0.43
2:D:27:ASP:OD1	2:D:28:LEU:N	2.51	0.43
1:E:161:ALA:HA	1:E:191:PHE:HE1	1.82	0.43
1:E:306:VAL:HG13	1:E:395:GLY:O	2.17	0.43
1:A:295:LEU:HG	1:A:299:HIS:CE1	2.53	0.43
2:F:36:PHE:CD1	2:F:45:ILE:HD13	2.54	0.43
2:F:123:ASP:OD1	2:F:123:ASP:N	2.49	0.43
1:A:186:ILE:HG12	1:E:22:TRP:HH2	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:72:CYS:SG	2:B:134:PRO:HD3	2.58	0.43
2:B:340:GLU:HG3	2:B:355:TYR:O	2.18	0.43
1:C:257:LEU:O	1:C:297:ALA:HB1	2.19	0.43
2:D:160:LEU:HD13	2:D:225:ILE:HD11	2.01	0.43
1:E:330:PHE:CD2	1:E:403:PHE:HZ	2.36	0.43
2:B:308:TYR:O	2:B:334:ILE:HA	2.19	0.43
1:E:115:VAL:O	1:E:153:THR:HA	2.18	0.43
1:E:200:THR:HG23	1:E:203:PRO:HG3	2.01	0.43
1:A:67:ILE:HD11	1:A:131:TYR:HB3	2.01	0.43
2:D:8:ARG:HH21	2:D:60:LEU:HD13	1.83	0.43
1:E:179:LEU:HD11	1:E:188:ALA:HB2	2.00	0.43
2:F:282:ARG:HA	2:F:298:PHE:CD1	2.49	0.43
1:A:170:LEU:HA	1:A:195:TYR:O	2.19	0.42
1:E:255:ASP:O	1:E:259:LYS:N	2.47	0.42
2:B:402:PRO:O	2:B:405:VAL:HG22	2.19	0.42
2:F:41:LYS:HA	2:F:128:LYS:O	2.19	0.42
2:F:72:CYS:SG	2:F:134:PRO:HD3	2.59	0.42
2:F:224:LYS:HG3	2:F:244:ALA:HB2	2.02	0.42
1:C:288:ASP:HB3	1:C:291:ALA:HB3	2.00	0.42
1:E:42:TYR:CZ	1:E:46:LYS:HD2	2.54	0.42
1:A:54:VAL:O	1:A:166:ASN:HB2	2.20	0.42
1:A:212:LEU:HD22	1:A:215:ILE:HD11	2.01	0.42
1:A:338:TYR:OH	2:B:124:LEU:HD13	2.20	0.42
1:C:338:TYR:OH	2:D:124:LEU:HD13	2.19	0.42
2:D:57:ASP:OD2	2:D:59:LYS:HB2	2.20	0.42
2:F:187:LYS:HB2	2:F:188:PRO:CD	2.49	0.42
2:B:82:PRO:HG2	2:B:123:ASP:HB3	2.01	0.42
2:B:382:ASP:OD1	2:B:411:LYS:HD3	2.20	0.42
2:D:208:ARG:O	2:D:212:VAL:HG23	2.19	0.42
1:C:196:ARG:HD3	1:C:217:VAL:HA	2.01	0.42
1:C:406:ARG:O	1:C:409:ARG:HG2	2.20	0.42
2:D:181:MET:HB2	2:D:319:TYR:CZ	2.54	0.42
2:B:8:ARG:NH1	2:B:19:HIS:HB3	2.35	0.41
2:D:338:LEU:HG	2:D:354:THR:HA	2.02	0.41
1:E:71:ASP:OD1	1:E:71:ASP:N	2.53	0.41
1:C:407:LEU:O	1:C:411:LEU:HG	2.19	0.41
2:B:21:ALA:HB3	2:B:142:ILE:HG23	2.02	0.41
2:B:310:GLU:O	2:B:336:ILE:HA	2.20	0.41
1:E:37:ARG:HD3	1:E:85:ARG:NH1	2.35	0.41
2:D:21:ALA:HB3	2:D:142:ILE:HG23	2.01	0.41
2:D:100:GLU:O	2:D:104:ILE:HG12	2.19	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:66:LYS:O	2:B:70:ARG:HG3	2.21	0.41
2:B:74:PHE:CE1	2:B:130:ILE:HG12	2.56	0.41
2:F:109:SER:HA	2:F:116:ILE:HG12	2.02	0.41
2:B:13:LYS:HB3	2:B:14:ASP:H	1.70	0.41
2:B:337:LEU:HA	2:B:353:ILE:O	2.21	0.41
1:C:2:VAL:CG2	1:C:50:VAL:HG12	2.50	0.41
2:D:163:TYR:HB2	2:D:224:LYS:HB3	2.01	0.41
1:E:347:PRO:HB3	1:E:361:ILE:HD12	2.02	0.41
2:F:160:LEU:HD21	2:F:210:LEU:HD21	2.02	0.41
1:A:205:ARG:HD3	1:A:209:LYS:HB2	2.03	0.41
2:B:86:ARG:HD3	2:B:121:PHE:CE1	2.56	0.41
2:B:134:PRO:HB2	2:B:136:ILE:HD12	2.02	0.41
1:C:118:ILE:HD13	1:C:121:ILE:HD12	2.02	0.41
1:C:240:LYS:HD2	1:C:240:LYS:HA	1.86	0.41
2:D:131:ILE:HD12	2:D:132:LYS:N	2.36	0.41
2:D:309:VAL:HA	2:D:335:LEU:O	2.20	0.41
1:E:158:TYR:CD1	1:E:187:MET:HB2	2.56	0.41
1:E:333:ASP:OD1	1:E:334:THR:N	2.52	0.41
2:F:21:ALA:HB3	2:F:142:ILE:HG23	2.02	0.41
2:F:187:LYS:HB2	2:F:188:PRO:HD3	2.02	0.41
1:A:397:TYR:HD1	1:A:397:TYR:H	1.69	0.41
1:E:243:TYR:HA	1:E:424:VAL:O	2.21	0.41
1:A:78:LYS:HD3	1:A:81:LEU:HD12	2.03	0.40
2:B:168:TRP:CD1	2:B:191:PHE:HZ	2.40	0.40
1:A:115:VAL:HG12	1:A:174:ASP:HB3	2.02	0.40
1:A:266:SER:HA	1:A:270:LEU:CB	2.52	0.40
2:F:81:PRO:HA	2:F:82:PRO:HD3	1.90	0.40
1:A:400:LYS:HB2	1:A:403:PHE:HB3	2.02	0.40
1:C:115:VAL:O	1:C:153:THR:HA	2.20	0.40
2:D:230:VAL:HG22	2:D:238:VAL:HG22	2.03	0.40
2:D:8:ARG:HB3	2:D:59:LYS:CD	2.51	0.40
2:F:159:LYS:HE2	2:F:228:GLU:CD	2.42	0.40
1:C:362:LEU:HD12	1:C:386:PRO:HG3	2.02	0.40
2:F:36:PHE:CE1	2:F:45:ILE:HD13	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	440/459 (96%)	420 (96%)	20 (4%)	0	100	100
1	C	435/459 (95%)	422 (97%)	13 (3%)	0	100	100
1	E	435/459 (95%)	423 (97%)	12 (3%)	0	100	100
2	B	477/501 (95%)	451 (94%)	26 (6%)	0	100	100
2	D	475/501 (95%)	453 (95%)	20 (4%)	2 (0%)	34	68
2	F	479/501 (96%)	455 (95%)	24 (5%)	0	100	100
All	All	2741/2880 (95%)	2624 (96%)	115 (4%)	2 (0%)	51	83

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	276	LYS
2	D	274	VAL

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	314/401 (78%)	311 (99%)	3 (1%)	76	89
1	C	308/401 (77%)	305 (99%)	3 (1%)	76	89
1	E	304/401 (76%)	299 (98%)	5 (2%)	62	83
2	B	257/462 (56%)	255 (99%)	2 (1%)	81	92
2	D	254/462 (55%)	251 (99%)	3 (1%)	71	87

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	F	252/462 (54%)	250 (99%)	2 (1%)	81	92
All	All	1689/2589 (65%)	1671 (99%)	18 (1%)	73	88

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	21	LYS
1	A	222	TYR
1	A	431	TYR
2	B	13	LYS
2	B	14	ASP
1	C	5	ARG
1	C	233	TYR
1	C	332	ARG
2	D	13	LYS
2	D	155	PHE
2	D	298	PHE
1	E	3	TYR
1	E	196	ARG
1	E	222	TYR
1	E	268	ARG
1	E	426	LYS
2	F	155	PHE
2	F	449	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 8 ligands modelled in this entry, 5 are monoatomic - leaving 3 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	GOL	A	501	-	5,5,5	0.89	0	5,5,5	1.01	0
5	EDO	B	501	-	3,3,3	0.46	0	2,2,2	0.30	0
3	GOL	E	501	-	5,5,5	0.94	0	5,5,5	0.94	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	501	-	-	1/4/4/4	-
5	EDO	B	501	-	-	0/1/1/1	-
3	GOL	E	501	-	-	0/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	501	GOL	C1-C2-C3-O3

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	501	EDO	2	0
3	E	501	GOL	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	442/459 (96%)	-0.47	3 (0%) 87 81	29, 70, 127, 165	0
1	C	437/459 (95%)	-0.41	3 (0%) 87 81	32, 79, 138, 164	0
1	E	437/459 (95%)	-0.39	4 (0%) 84 75	28, 79, 132, 176	0
2	B	479/501 (95%)	-0.24	18 (3%) 40 25	53, 101, 166, 203	0
2	D	477/501 (95%)	-0.25	7 (1%) 73 61	45, 103, 184, 214	0
2	F	481/501 (96%)	-0.20	21 (4%) 34 20	51, 100, 159, 247	0
All	All	2753/2880 (95%)	-0.32	56 (2%) 65 50	28, 91, 155, 247	0

All (56) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	380	ASP	6.2
2	B	470	SER	5.5
2	F	348	ASN	4.2
2	F	465	LYS	3.8
1	E	381	GLU	3.4
2	B	471	ASP	3.4
2	F	255	ASP	3.4
2	B	186	ASP	3.4
2	D	466	TRP	3.4
2	F	467	GLN	3.4
2	F	186	ASP	3.3
2	B	163	TYR	3.3
2	F	468	GLY	3.3
2	F	464	LEU	3.3
2	B	465	LYS	3.3
2	B	464	LEU	3.3
2	F	462	TYR	3.2
2	F	343	GLY	3.2
2	B	344	LYS	3.2

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Mol	Chain	Res	Type	RSRZ
2	F	260	ASP	3.1
2	B	359	ILE	3.1
1	E	399	THR	3.1
1	C	415	ASP	3.1
2	F	471	ASP	3.0
1	A	434	SER	3.0
2	F	362	SER	2.9
2	B	360	ASP	2.9
2	B	468	GLY	2.9
2	F	466	TRP	2.9
2	F	256	GLU	2.7
1	A	435	ARG	2.6
2	B	330	VAL	2.6
2	B	343	GLY	2.6
2	B	288	VAL	2.6
2	B	472	ALA	2.5
2	D	469	ILE	2.5
2	D	471	ASP	2.5
1	E	233	TYR	2.4
2	D	467	GLN	2.4
1	A	436	ARG	2.3
2	F	359	ILE	2.2
2	D	273	ASN	2.2
2	F	261	SER	2.2
2	B	467	GLN	2.2
2	B	367	TRP	2.1
2	D	359	ILE	2.1
2	D	462	TYR	2.1
2	F	463	LYS	2.1
2	F	469	ILE	2.1
2	B	255	ASP	2.1
2	F	257	LYS	2.0
1	C	381	GLU	2.0
2	F	345	GLU	2.0
2	B	449	TYR	2.0
1	C	142	GLY	2.0
2	F	378	GLU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	CL	F	501	1/1	0.68	0.10	100,100,100,100	0
4	CL	A	504	1/1	0.83	0.39	89,89,89,89	0
3	GOL	A	501	6/6	0.89	0.20	69,69,69,69	0
4	CL	F	502	1/1	0.89	0.10	72,72,72,72	0
5	EDO	B	501	4/4	0.90	0.14	58,58,58,58	0
3	GOL	E	501	6/6	0.91	0.21	41,52,58,65	0
4	CL	A	502	1/1	0.95	0.23	62,62,62,62	0
4	CL	A	503	1/1	0.97	0.10	81,81,81,81	0

6.5 Other polymers [i](#)

There are no such residues in this entry.